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6 May 2005

Dear Sirs,

International (PCT) Patent Application No. PCT/EP2004/053046

Barcode

Money Controls Limited

Our ref: SLG/44861PCT1

We file herewith amended claims under Art. 19 PCT:-

Claim 1 replaces claim 1 as filed.

Claims 2-5 are unchanged.

Claim 6 replaces claim 6 as filed.

Claim 7 replaced claim 7 as filed.

Claims 8-14 are unchanged.

Claim 15 replaces claim 15 as originally filed.

Claims 16-17 are unchanged.

Claim 18 replaces claim 18 as originally filed.

Claims 19-22 are unchanged.

Claim 23 replaces claim 23 as originally filed.

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Claim 24 replaces claim 14 as originally filed.

Claims 25-30 are unchanged.

Claim 31 replaces claim 31 as originally filed.

Claim 32 replaces claim 32 as originally filed.

Claims 33-36 are unchanged.

Claim 37 replaces claim 37 as originally filed.

Claim 38 replaces claim 38 as originally filed.

Claims 39-44 are unchanged.

Claim 45 replaces claim 45 as originally filed.

Claim 46 replaces claim 46 as originally filed.

Claims 47-49 are unchanged.

Yours faithfully,

**Stuart Geary**  
**Venner Shipley LLP**

## Claims

1. A bar code scanner comprising light source means (15), light detector means (16) and an elongate light transmissive opening (19) arranged for being brought into  
5 proximity with a bar code (32) for scanning thereof, the light source means (15) being configured for directing a beam through said opening (19) and the light detector means (16) being configured for detecting light from said beam reflected back through the opening (19), **characterised in that** said opening (19) comprises a slit (19) formed in a metallic element (18).  
10
2. A bar code scanner according to claim 1, wherein the light source means (15) is configured for directing said beam through the slit (19) such that the beam path through the slit (19) lies in a plane substantially aligned with the slit (19).
- 15 3. A bar code scanner according to claim 2, where in the light source means (15) is configured to direct light obliquely through the slit (19).
4. A bar code scanner according to claim 1, 2 or 3, wherein the light detector means (16) is configured for sensing reflections of said beam following a path  
20 through the slit (19) that lies in a plane substantially aligned with the slit (19).
5. A bar code scanner according to claim 4, wherein the light detector means (16) is directional and arranged such that it is directed along a line substantially normal to the slit (19).  
25
6. A bar code scanner according to any preceding claim, wherein the light source is an infrared LED (15).
7. A bar code scanner according to any preceding claim, wherein the metallic  
30 element (18) is formed from a stainless steel.

8. A bar code scanner according to any preceding claim, including a panel (21) by which a sheet (31) can be passed, the panel (21) having an aperture through which the slit (19) is exposed.

5 9. A bar code scanner according to claim 8, including a member (17) having a dished portion, wherein the slit (19) is formed in an opaque element (18) which is accommodated in said dished portion and the dished portion is received in said aperture.

10 10. A bar code scanner according to any preceding claim, wherein the width of the slit (19) is in the range 0.2mm to 0.4mm.

11. A bar code scanner according to claim 10, wherein the width of the slit (19) is 0.3mm.

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12. A bar code scanner according to any preceding claim, wherein the separation of the openings of the slit (19) is in the range 0.05 to 0.1 mm.

13. A bar code scanner according to claim 12, wherein the separation of the  
20 openings of the slit (19) is 0.075mm.

14. A sheet validator including a sheet path (6) along which a sheet (31) to be validated is passed and a bar code scanner (12), according to any preceding claim, located for scanning a bar code (32) on a sheet (31) passing along the sheet path (6).

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15. A method of manufacturing a bar code scanner comprising forming a light transmissive slit (19) in a metallic element (18) and mounting the element (18) with respect to a light source means (15) and a light detector means (16), such light from the light source means (15) can pass through the slit (19) and light from the light  
30 source means (15) that is reflected back through the slit (19) can be detected by the light detector means (16).

16. A method according to claim 15, wherein the slit (19) is formed by chemically etching a thin metallic element (18).

17. A method of manufacturing a sheet validator including a bar code scanner (12), the method including a method according to claim 15 or 16 for manufacturing said bar code scanner (12).

18. A bar code scanner comprising:  
a metallic element having a light transmissive slit therein,  
light source means for directing a beam through said slit, and  
light detector means for detecting light from said beam reflected back through the slit,  
wherein the slit is arranged for being brought into proximity to a bar code for scanning thereof.

19. A bar code scanner according to claim 18, wherein the light source means is configured for directing said beam through the slit such that the beam path through the slit lies in a plane substantially aligned with the slit.

20. A bar code scanner according to claim 19, where in the light source means is configured to direct light obliquely through the slit.

21. A bar code scanner according to claim 18, wherein the light detector means is configured for sensing reflections of said beam following a path through the slit that lies in a plane substantially aligned with the slit.

22. A bar code scanner according to claim 21, wherein the light detector means is directional and arranged such that it is directed along a line substantially normal to the slit.

23. A bar code scanner according to claim 18, wherein the light source is an infrared LED.

24. A bar code scanner according to claim 18, wherein the metallic element is formed from a stainless steel.

25. A bar code scanner according claim 18, including a panel by which a sheet  
5 can be passed, the panel having an aperture through which the slit is exposed.

26. A bar code scanner according to claim 25, including a member having a  
dished portion, wherein the slit is formed in an opaque element which is  
accommodated in said dished portion and the dished portion is received in said  
10 aperture.

27. A bar code scanner according to claim 18, wherein the width of the slit is in  
the range 0.2mm to 0.4mm.

15 28. A bar code scanner according to claim 27, wherein the width of the slit is  
0.3mm.

29. A bar code scanner according to claim 18, wherein the separation of the  
openings of the slit is in the range 0.05 to 0.1 mm.

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30. A bar code scanner according to claim 29, wherein the separation of the  
openings of the slit is 0.075mm.

31. A bar code scanner comprising:  
25 a metallic element having a slit therein,  
a light source means for directing light obliquely through said slit in a plane  
normal to and aligned with said slit, and  
a light detector means for receiving light passing through the slit along a  
path normal thereto,  
30 wherein the light source means and the light detector means are on the same  
side of said element.

32. A sheet validator including a sheet path along which a sheet to be validated is passed and a bar code scanner comprising:

a metallic element having a light transmissive slit therein,

light source means for directing a beam through said slit, and

5 light detector means for detecting light from said beam reflected back through the slit,

wherein the slit is arranged for being brought into proximity to a bar code for scanning thereof.

10 33. A sheet validator according to claim 32, wherein the light source means is configured for directing said beam through the slit such that the beam path through the slit lies in a plane substantially aligned with the slit.

34. A sheet validator according to claim 33, where in the light source means is  
15 configured to direct light obliquely through the slit.

35. A sheet validator according to claim 32, wherein the light detector means is configured for sensing reflections of said beam following a path through the slit that lies in a plane substantially aligned with the slit.

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36. A sheet validator according to claim 35, wherein the light detector means is directional and arranged such that it is directed along a line substantially normal to the slit.

25 37. A sheet validator according to claim 32, wherein the light source is an infrared LED.

38. A sheet validator according to claim 32, wherein the metallic element is formed from a stainless steel.

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39. A sheet validator according claim 32, including a panel by which a sheet can be passed, the panel having an aperture through which the slit is exposed.

40. A sheet validator according to claim 39, including a member having a dished portion, wherein the slit is formed in an opaque element which is accommodated in said dished portion and the dished portion is received in said aperture.

5 41. A sheet validator according to claim 32, wherein the width of the slit is in the range 0.2mm to 0.4mm.

42. A sheet validator according to claim 41, wherein the width of the slit is 0.3mm.

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43. A sheet validator according to claim 32, wherein the separation of the openings of the slit is in the range 0.05 to 0.1 mm.

44. A sheet validator according to claim 43, wherein the separation of the  
15 openings of the slit is 0.075mm.

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45. A sheet validator including a sheet path along which a sheet to be validated is passed and a bar code scanner comprising:

20 a metallic element having a slit therein,  
a light source means for directing light obliquely through said slit in a plane normal to and aligned with said slit, and  
a light detector means for receiving light passing through the slit along a path normal thereto,

25 wherein the light source means and the light detector means are on the same side of said member.

46. A method of manufacturing a bar code scanner comprising forming a light transmissive slit in a metallic element and mounting the metallic element with respect to a light source means and a light detector means, such light from the light  
30 source can pass through the slit and light from the light source that is reflected back through the slit can be detected by the light detector means.



47. A method according to claim 46, wherein the slit is formed by chemically etching a thin metallic element.

48. A method of manufacturing a sheet validator including a bar code scanner,  
5 the method including a method according to claim 46 for manufacturing said bar code scanner.

49. A method of manufacturing a sheet validator including a bar code scanner,  
the method including a method according to claim 47 for manufacturing said bar  
10 code scanner.